

Philanthus was seen bothering the colonies in the course of brief observations made during the next few days.

Philanthus flavifrons is a common species in the arid portions of western North America. The literature, however, contains no reference to its biology. In fact, of the 31 species and subspecies of *Philanthus* in North America, Strandtmann states that we have definite knowledge on the biology of only two, *gibbosus* (Fabr.) and *ventilabris* Fabr. (Strandtmann, 1946, A review of the North American species of *Philanthus*. North of Mexico, Ohio State Univ., 126 pp.). Both species are well known as predators of solitary bees. Small bees of the families Halictidae and Andrenidae (Panurginae) are the principal prey of these two species (Reinhard, 1924, The life history and habits of the solitary wasp, *Philanthus gibbosus*, Smithsn. Inst. Ann. Rpt. for 1922, pp. 363-76; also Krombein, 1936, Biological notes on some solitary wasps, Ent. News 47:93-99).

Although I have seen no previous record of attacks on honey bees by philanthid wasps in North America, *triangulum* (Fabr.), a large European species known as the bee wolf, stores its nests principally with honey bees that it attacks on flowers. *P. gibbosus* and *ventilabris* also attack their prey on flowers.

It was truly astonishing to see so small a wasp as *flavifrons* "beard the lions in their den" and so obviously dominate the situation. The honey bees, which appeared to be terrorized by the wasp, outweighed her at least two fold. Was the *Philanthus* attempting to provision her brood cells with honey bees? It remains to be seen whether or not the burrows of this wasp could accommodate insects of such size.—GEORGE E. BOHART, Agricultural Research Service, Logan, Utah in cooperation with the Utah Agricultural Experiment Station.

NEW SPECIES AND DISTRIBUTION RECORDS OF THE GENUS CAECULUS IN NORTH AMERICA

(ACARINA, CAECULIDAE)

BY STANLEY MULAİK AND DONALD M. ALLRED,
University of Utah, Salt Lake City

Mites of the genus *Caeculus* appear to be very widely distributed. Representatives are known from Africa, Australia, Japan and the Philippine Islands, to mention only a few. Collections in North America have been primarily southern. Recent collections of specimens in Oregon, Utah, North Carolina, Mexico and Guatemala show a wide distribution in the Western Hemisphere.

Until recent years, mites of this genus have been represented in North America by few known species. Banks (1899 and 1905) described *Caeculus americanus* from the region of Washington, D. C. and *C. clavatus* from California. Nevin described *C. pettiti* from Virginia in 1943. In 1945 Mulaik described nine new species from the southern part of the United States and one new species from Puerto Rico.

Through the courtesy of Dr. E. W. Baker of the United States National Museum, a series of mites of the genus *Caeculus* were received for study. Among this lot were several new species and new distributional records, some of which are reported in this paper. In addition, several mites representing new distribution records and new species have been received from Dr. C. Lynn Hayward and Dr. D. Elden Beck of the Brigham Young University, and through collections of the senior author. The five new species included in this paper makes a total of eighteen species known to occur in North America. The new records for some previously described species considerably extends their known geographic range.

Caeculus oregonus, new species

(Figs. 5, 9, 13, 19)

Body.—The holotype is of small size, having a length of .63 mm. to the anterior edge of the dorso-lateral gnathosomal tubercules. The width at the fourth pair of legs is .49 mm. The propodosomal plate does not project anteriorly over the gnathosoma, and does not cover the palps from above. This plate has eleven setae situated laterally in two groups of six and five, respectively. The median metapodosomal plate is longer than wide, and is distinctly separate from the other plates. It has eight setae arranged in a 2-2-4 sequence. The left lateral metapodosomal plate has three setae in a 1-1-1 sequence, and the right lateral metapodosomal plate has four setae in a 2-1-1 sequence. The anterior transverse opisthosomal plate has seven setae arranged in a slightly irregular line. The posterior transverse opisthosomal plate has five setae in an irregular line. There are three setae in an irregular line on the posterior end of the hysterosoma. The dorso-lateral gnathosomal sensillae are expanded distally into racket-like organs. The dorso-medial gnathosomal setae are large, clavate, and arise from prominent tubercules.

Legs.—Leg I has six segments, is .43 mm. long, and is shorter than the body but slightly longer and more strongly developed than the other legs. Trochanter I has one tubercled seta on the anterior edge, one seta located dorso-medially, and one seta on a tubercle set in slightly from the posterior edge. Femur I has two clavate setae on its inner edge, the distal one being longer. Genu I has one seta on its inner edge. Tibia I has two long spines on its inner edge. Tarsus I has three spines on the inner edge.

Discussion.—This species is very similar to *C. brevis* Mulaik,

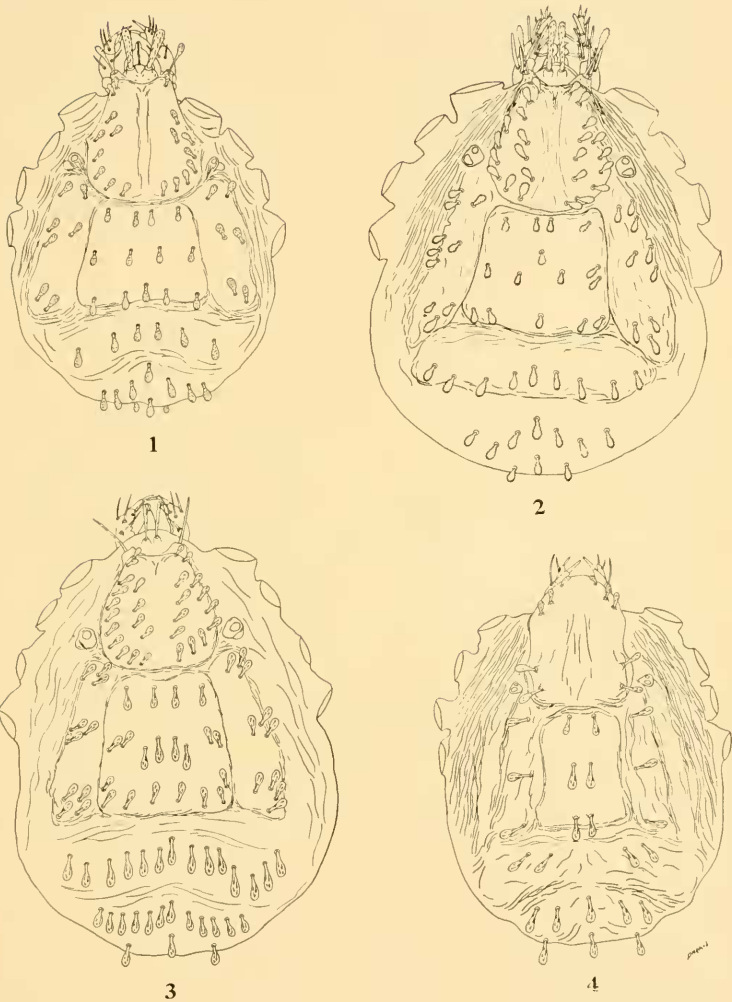


PLATE I. SPECIES OF CAECULUS

Fig. 1, *C. mexicanus*, dorsal view of body; fig. 2, *C. orchidicolis*, dorsal view of body; fig. 3, *C. potosi*, dorsal view of body; fig. 4, *C. hardyi*, dorsal view of body.

but differs from it in having the dorso-lateral gnathosomal sensillae much expanded distally, forming racket-like organs. The dorso-medial gnathosomal setae of *C. oregonus* are much thicker than in *C. brevis*. The number and arrangement of the setae of the lateral metapodosomal plates vary only slightly between the two species. In *C. oregonus* the posterior seta of trochanter I is set in slightly from the edge, whereas in *C. brevis* it is located on the posterior edge.

Type.—Holotype, collected from moss at Oak Ridge, Oregon by Stanley Mulaik, June 22, 1952. Deposited in the Acarina collection of the University of Utah.

Caeculus orchidicolis, new species

(Figs. 2, 8, 17, 20)

Body.—The length of the body to the anterior edge of the dorso-lateral gnathosomal tubercles varies in this species from .88 mm. to 1.69 mm. for thirteen specimens with an average length of 1.09 mm. The holotype is 1.18 mm. long. The width of the body at the fourth pair of legs varies from .66 mm. to 1.28 mm. for thirteen specimens with an average of .83 mm. The holotype has a width of .94 mm. The propodosomal plate does not project anteriorly over the gnathosomal tubercles and does not cover the palps from above. This plate has twenty-four laterally-placed setae arranged in four distinct rows, with twelve setae on each side of the plate. The median metapodosomal plate has fifteen setae arranged in a 4-6-5 sequence. The left lateral metapodosomal plate has ten setae arranged in a 3-4-3 sequence, and the right lateral metapodosomal plate has nine setae arranged in a 3-3-3 sequence. The anterior transverse opisthosomal plate has an irregular row of nine setae. The posterior transverse opisthosomal plate has seven setae in an irregular row. There are three setae on the posterior end of the hysterosoma.

Legs.—Leg I is stout and heavily spined, and consists of six segments. Its length is 1.06 mm., being slightly shorter than the body. Trochanter I has one curved seta on its anterior (inner) edge set in a depression on the tip of a prominent tubercle. There are two similar setae located dorso-medially and two setae on the posterior (outer) edge. Femur I has two long, roughened spines on its inner border, and genu I has two dagger-like spines on the inner edge. Tibia I has four dagger-like spines on the inner edge, the distal ones being longest. Tarsus I has five spines on its inner border. Near the tip of all tarsi on the dorsal side is a long curved seta which projects past the ends of the claws. This seta is set in a depression. On the dorsal side of tarsi I and II there is found a sensory pit which is located a distance from the end equal to the length of the claw. This pit is over fifty microns deep, and its outer border is slightly raised. Its diameter is about twelve microns.

Discussion.—This species is similar to *C. puertoricus* Mulaik and *C. potosi*. It differs from the former in having more dorsal setae, and in the chaetotaxie of leg I. *C. orchid-*

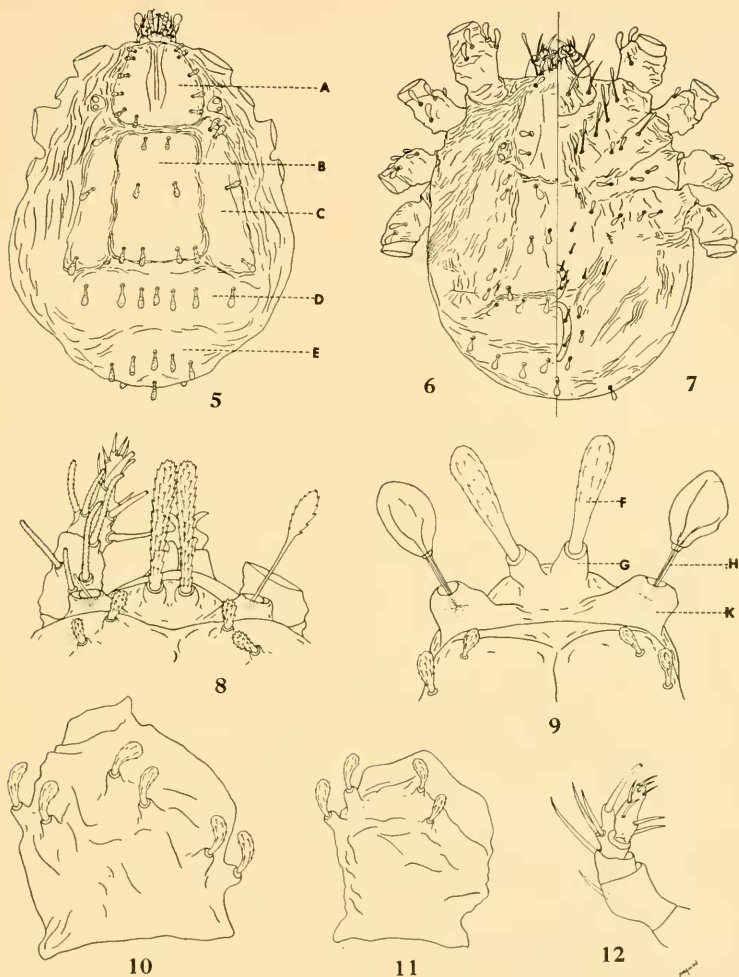


PLATE II. SPECIES OF CAECULUS

Fig. 5, *C. oregonus*, dorsal view of body; A, propodosomal plate; B, metapodosomal plate; C, lateral metapodosomal plate; D, anterior transverse opisthosomal plate; E, posterior transverse opisthosomal plate; fig. 6, *C. tipus*, left dorsal half of body; fig. 7, *C. tipus*, left ventral half of body; fig. 8, *C. orchidicolis*, dorsal view of anterior end of hysterosoma; fig. 9, *C. oregonus*, dorsal view of anterior end of hysterosoma; F, dorso-medial gnathosomal seta; G, dorso-medial gnathosomal tubercle; H, dorso-lateral gnathosomal sensilla; K, dorso-lateral gnathosomal tubercle; fig. 10, *C. potosi*, dorsal view of right trochanter I; fig. 11, *C. tipus*, dorsal view of right trochanter I; fig. 12, *C. tipus*, ventro-lateral view of right palp.

dicolis can be separated from *C. potosi* by the setae on leg 1 and by the setae on the dorsal plates.

Types.—Holotype, from Chilpancingo, Mexico, collected from orchid plants at Laredo, Texas by R. M. Fouts and Mr. Cary, March 27, 1946. Deposited in the United States National Museum. Paratypes: Fourteen specimens from Mexico were collected from orchid plants which were intercepted at plant quarantine stations as follows: 1 specimen from San Luis Potosi, intercepted at Laredo, Texas by C. D. Babb, May 14, 1946; 1 specimen intercepted at Laredo, Texas by Mr. Leary, May 7, 1946; 1 specimen from Chilpancingo, Gro. intercepted by R. M. Fouts and Mr. Cary, March 27, 1946; 1 specimen intercepted at Laredo, Texas by R. M. Fouts, December 10, 1945; 1 specimen from Veracruz, intercepted at Laredo, Texas by C. D. Babb, May 13, 1946; 1 specimen from Tamazunchale, S. L. P., intercepted at Laredo, Texas by E. L. Talbert, July 30, 1946; 1 specimen from Tamazunchale, intercepted at Laredo, Texas by Mr. Leary, Mr. Cary, and R. M. Fouts, April 26, 1946; 1 specimen from Tamazunchale, intercepted at Laredo, Texas by Mr. Cary, June 10, 1946; 1 specimen from Arriaga, Chis., intercepted at Laredo, Texas by R. M. Fouts, December 4, 1950; 1 specimen intercepted at Brownsville, Texas, October 13, 1950; 1 specimen from Tamazunchale, intercepted at Laredo, Texas by Mr. Cary, August 10, 1946; 1 specimen from Chilpancingo, Gro., intercepted at Laredo, Texas by Mr. Walters, August 29, 1946; 1 specimen from Guerrero, intercepted at Laredo, Texas by Mr. Watt, February 28, 1946; 1 specimen intercepted at Brownsville, Texas, September 5, 1946. In addition, 3 paratypes were collected as follows: 1 specimen from Guatemala was collected from *Odonoglossum maculatum* intercepted at San Francisco, California, May 6, 1946; 1 specimen from Belize, Br. Honduras collected from orchid plants intercepted at Brownsville, Texas, April 7, 1950; 1 specimen from Dolores, Hidalgo, Gto., Mexico collected from selaginella plants intercepted at Laredo, Texas by Mr. Chapman, January 31, 1949. All 17 paratypes are deposited in the United States National Museum.

***Caeculus potosi*, new species**

(Figs. 3, 10, 15)

Body.—The holotype is of large size, having a length of 1.54 mm. to the anterior edge of the dorso-lateral gnathosomal tubercles. The width of the body at the fourth pair of legs is 1.16 mm. The dorsal plates are not as distinct as in *C. orchidicolis*, which this species resembles. The propodosomal plate does not project anteriorly over the gnathosomal tubercles, and does not cover the palps from above. It has twenty-eight setae which are situated laterally in two groups of fifteen

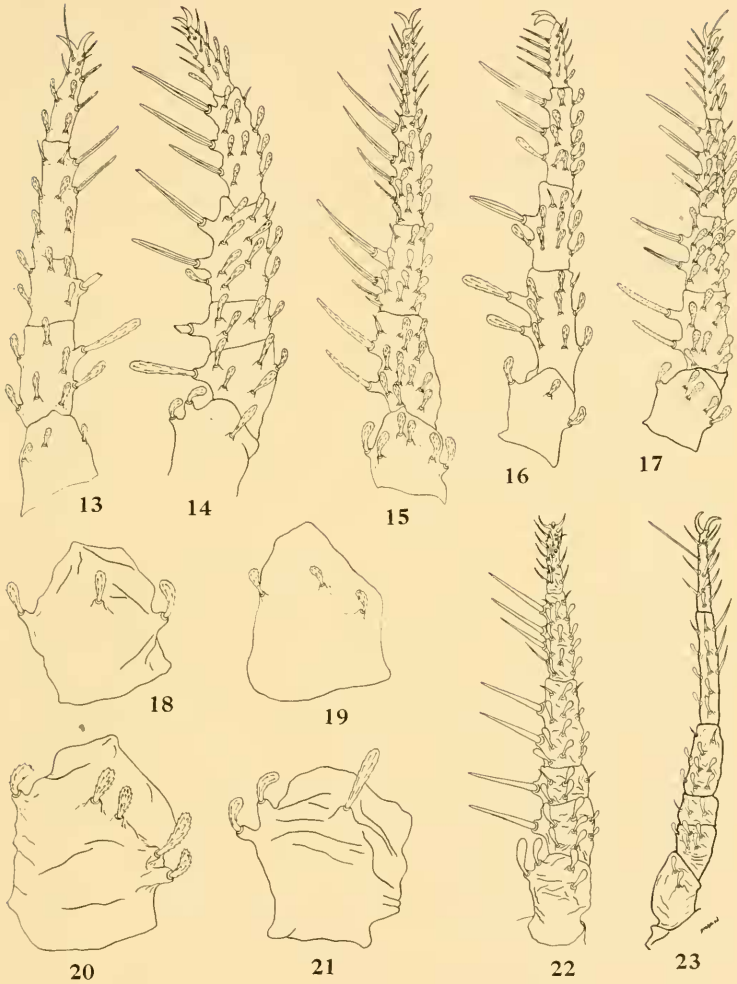


PLATE III. SPECIES OF CAECULUS

Fig. 13, *C. oregonus*, dorsal view of left leg I; fig. 14, *C. hardyi*, dorsal view of right leg I; fig. 15, *C. potosi*, dorsal view of right leg I; fig. 16, *C. mexicanus*, dorsal view of right leg I; fig. 17, *C. orchidicolis*, dorsal view of right leg I; fig. 18, *C. mexicanus*, dorsal view of right trochanter I; fig. 19, *C. oregonus*, dorsal view of right trochanter I; fig. 20, *C. orchidicolis*, dorsal view of right trochanter I; fig. 21, *C. hardyi*, dorsal view of right trochanter I; fig. 22, *C. tipus*, dorsal view of right leg I; fig. 23, *C. tipus*, dorsal view of right leg IV.

and thirteen, respectively. The median metapodosomal plate is about as wide as long, and has twenty setae arranged in a 4-8-8 sequence. Each lateral metapodosomal plate has ten setae arranged in a 3-3-4 sequence. The anterior transverse opisthosomal plate has fourteen setae in an irregular line. The posterior transverse opisthosomal plate has twelve setae in an irregular line. There are three setae in an irregular row on the posterior end of the hysterosoma. The dorso-lateral gnathosomal sensillae are whip-like, being expanded only very slightly on the ends. These are set in depressions in prominent tubercles. The dorso-medial gnathosomal setae are of medium size, weakly clavate, and arise from prominent tubercles.

Legs.—Leg I has six segments and is 1.29 mm. long, being shorter than the body. All the legs are of about equal size, legs I being only slightly longer and more strongly developed than the others. Trochanter I has two curved setae on the anterior edge, two curved setae located dorso-medially, and two curved setae on the posterior edge. All setae of trochanter I are on prominent tubercles. Femur I has two long, tapered setae on the inner edge. Genu I has two long and one short dagger-like setae on its inner edge. Tibia I has four dagger-like setae on the inner edge, the distal one being longest. Tarsus I has five spines on its inner edge.

Discussion.—This species resembles *C. orchidicolis*, but can be separated from it by the following characters. The dorso-medial gnathosomal setae of *C. potosi* are not as strongly developed as in *C. orchidicolis*. The dorso-lateral sensillae of *C. potosi* are whip-like, whereas in *C. orchidicolis* these are more expanded distally. Trochanter I of *C. potosi* has two anterior clavate setae, whereas *C. orchidicolis* has only one. Genu I of *C. potosi* has three spines on the anterior edge, whereas *C. orchidicolis* has only two spines. In addition, the number of setae on the dorsal plates is greater in *C. potosi* than in *C. orchidicolis*.

Type.—Holotype, from Tamazunchale, S. L. P., Mexico, collected by R. M. Fouts, Mr. Leary and Mr. Cary from orchid plants intercepted at Laredo, Texas, April 26, 1946. Deposited in the United States National Museum.

***Caeculus mexicanus*, new species**

(Figs. 1, 16, 18)

Body.—The length of the body to the anterior edge of the dorso-lateral gnathosomal tubercles varies from .57 mm. to 1.01 mm. for fifteen specimens, with an average length of .84 mm. The holotype is .88 mm. long. The width of the body at the fourth pair of legs varies from .35 mm. to .72 mm. for fifteen specimens, with an average width of .60 mm. The holotype has a width of .69 mm. The propodosomal plate does not project anteriorly over the gnathosomal tubercles and does not cover the palps from above. This plate has eighteen setae situated laterally in

two groups of nine. The median metapodosomal plate is as broad as it is long, and is distinctly separated from the other plates. It has thirteen setae arranged in a 4-4-5 sequence. The left lateral metapodosomal plate has seven setae arranged in a 2-3-2 sequence, and the right lateral metapodosomal plate has six setae arranged in a 2-2-2 sequence. The anterior transverse opisthosomal plate has six setae in an irregular line. The posterior transverse opisthosomal plate has seven setae in an irregular line. There are three setae in an irregular line on the posterior end of the hysterosoma. The dorso-lateral gnathosomal sensillae are clavo-capitate, arising from two prominent tubereles. The dorso-medial gnathosomal setae are large and clavate, arising from prominent tubereles.

Legs.—Leg I is composed of six segments and is .89 mm. long, being about the same length as the body. All legs are of about equal size, with legs I being only slightly larger than the others. Trochanter I has one slightly curved seta on a prominent tuberele on the anterior edge, one seta on a tuberele located dorso-medially, and one curved seta on a tuberele on the posterior edge. Femur I has two long clavate setae on its inner edge, the anterior one being longer. Genu I has one long, dagger-like spine and one short, clavate seta on the inner edge. Tibia I has two long, dagger-like spines and one short, clavate seta on the inner edge. Tarsus I has four dagger-like setae on the inner edge. Tibia III and IV are normal, not constricted in diameter.

Discussion.—*C. mexicanus* is similar to *C. brevis* Mulaik and *C. oregonus*. It is distinct from *C. brevis* by the greater number of setae on the dorsal plates, and by the number and arrangement of the setae on leg I. It differs from *C. oregonus* in having a greater number of dorsal setae, and in not having the dorso-lateral gnathosomal sensillae expanded distally to form racket-like organs.

Types.—Holotype, from San Luis Potosi, Mexico, collected from orchid plants intercepted at Brownsville, Texas, March 31, 1950. Deposited in the United States National Museum. Paratypes: Twelve specimens, deposited in the United States National Museum, were collected at quarantine stations from various plants which came from Mexico as follows: 7 specimens of the same data as the holotype; 3 specimens collected by R. Alexander from Bromeliads at Brownsville, Texas, March 14, 1951; 1 specimen collected by R. Alexander from Spanish moss at Brownsville, Texas, May 16, 1951; 1 specimen collected by Mr. Danos from Purple Sage at Laredo, Texas, July 17, 1951. In addition, 2 specimens, deposited in the acarina collection of the University of Utah, were collected from "coccid infested hosts" by F. F. Bibby at Mission, Texas, April 4, 1927.

Caeculus hardyi, new species

(Figs. 4, 14, 21)

Body.—This species is of medium size, varying in length to the anterior edge of the hysterosoma from .94 mm. to 1.31 for three specimens, with an average length of 1.07 mm. The holotype is .94 mm. long. The average width of three specimens is .69 mm. The holotype is .72 mm. wide at the fourth pair of legs. The propodosomal plate projects anteriorly over the gnathosoma, and covers the gnathosomal tubercles from above. This plate has three pairs of antero-lateral setae and two pairs of postero-lateral setae. The median metapodosomal plate is very distinctly separated from the other plates. It has three pairs of median setae arranged in a 2-2-2 sequence. The lateral metapodosomal plates each have three setae arranged in a 1-1-1 sequence. The anterior transverse opisthosomal plate has two pairs of setae, each pair being situated near the lateral ends of the plate. The posterior transverse opisthosomal plate has five setae arranged in an irregular line. There are three setae in an irregular line on the posterior end of the hysterosoma.

Legs.—Leg I is composed of seven segments, is .81 mm. long, and is slightly shorter than the body but longer and thicker than the other legs. Trochanter I has two curved setae on prominent tubercles on the anterior edge, and one long (59 microns) seta located dorso-medially. The basifemur and the telofemur each have one long seta on their inner edge. The genu has two long, dagger-like setae and one short, clavate seta on the inner edge. The tibia has three dagger-like spines on the inner edge, the distal ones being longest. The tarsus has one clavate seta and three spines on the inner edge. Tibia III and IV are constricted, being only half the diameter of tibia I.

Discussion.—This species is similar to *C. gertsehi* Mulaik, but it differs in the number and arrangement of the setae of the opisthosomal plates, the propodosomal plate, and trochanter I. In *C. hardyi* the two anterior setae of trochanter I are curved and normal, not elongated, and the single median seta is elongate and club-shaped. In addition, the body of *C. hardyi* is more rounded and not as elongate as *C. gertsehi*. *C. hardyi* also differs in having the basifemur and telofemur distinctly separate on all legs.

Types.—Holotype, from Villadama, N. L., Mexico, collected by Mr. Lewis from resurrection plants intercepted at the quarantine station at Laredo, Texas, July 28, 1948. Deposited in the United States National Museum. Paratypes: One specimen, deposited in the United States National Museum, collected from a nest of *Neotoma micropus* (woodrat), July 18, 1945 at Harlingen, Texas by Mr. Wooley and Mr. Hardy (for whom this species is named); 1 specimen, deposited in the acarina collection of the University of Utah, collected at San Pedro, Tam., Mexico by Stanley Mulaik, May 1936.

Caeculus americanus Banks

Caeculus americanus Banks, 1899. Proc. Ent. Soc. Wash. 4(3):221-222.

New Records.—Two specimens were collected from *Hilaria rigida* (a grass) from the Colorado Desert, 25 miles west of Blythe, California by J. D. Hood, August 19, 1927.

Caeculus calechius Mulaik

Caeculus calechius Mulaik, 1945. Bull. Univ. Utah, 35(17):5-6.

New Record.—One specimen was collected at the Desert Range Experiment Station, Millard County, Utah by Dr. D. Elden Beck, September 10, 1950. This is a very great extension of the known range to the northwest.

Caeculus dorotheae Mulaik

Caeculus dorotheae Mulaik, 1945. Bull. Univ. Utah, 35(17):9-10.

New Records.—One specimen was collected eight miles west of Sierra Blanca, Texas by Stanley and Dorothea Mulaik, September 5, 1946. One specimen was collected from Saltillo, Coah., Mexico from *Mammillaria* sp. (a cactus) intercepted at Laredo, Texas by C. P. Trotter, March 5, 1946.

Caeculus gertschi Mulaik

Caeculus gertschi Mulaik, 1945. Bull. Univ. Utah, 35(17):8.

New Record.—One specimen was collected from soil and leaf mold near Uvalde, Texas by H. M. Brundrett, March 15, 1943.

Caeculus kerrulius Mulaik

Caeculus kerrulius Mulaik, 1945. Bull. Univ. Utah, 35(17):8-9.

New Record.—One specimen was collected from soil and humus on "Y" mountain, east of Provo, Utah by Dr. C. Lynn Hayward in 1944. This record is a great extension of the known range to the northwest.

Caeculus pettiti Nevin

Caeculus pettiti Nevin, 1943. Ann. Ent. Soc. America, 36(3):389-393.

New Record.—One specimen was collected from the Duke Forest, Durham, North Carolina by Stanley Mulaik, August 18, 1952.

Caeculus valverdius Mulaik

Caeculus valverdius Mulaik, 1945. Bull. Univ. Utah, 35(17):6-7.

New Records.—Two specimens were collected seven miles west of Las Lunas, New Mexico by Stanley and Dorothea Mulaik, September 6, 1946. Two specimens were collected 17 miles northeast of Victoria, Taum., Mexico by Stanley Mulaik, January 8, 1950. One specimen was collected from the burrow of a Say's ground squirrel, 11 miles south of Roswell, New Mexico by Dr. G. E. Davis, August 19, 1940. A single specimen of this species was identified by the late Dr. H. E. Ewing as *C. americanus* Banks. Comparison with the type of *C. valverdius* indi-

ates it to be of this species. It was collected from *Hilaria rigida* (a grass) by J. D. Hood on the Colorado Desert, 25 miles west of Blythe, California, August 19, 1927.

Caeculus tipus Mulaik

Caeculus tipus Mulaik, 1945. Bull. Univ. Utah, 35(17):7

New Records.—Two specimens were collected 12 miles north of Alice, Jim Wells County, Texas by Stanley and Dorothea Mulaik, June 6, 1941. Several specimens were collected from under small rocks in a dry area, 17 miles northeast of Victoria, Tam., Mexico by Stanley and Dorothea Mulaik, January 8, 1950. Several nymphs and adults were present in this latter lot. The nymphs are in many respects so similar to the adults that there can be little doubt of their identity. A description of the nymph follows:

DESCRIPTION OF THE NYMPH OF *CAECULUS TIPUS* MULAİK, 1945

(Figs. 6, 7, 11, 12, 22, 23)

Body.—The body is slightly oval, nearly round, having a length of 1.06 mm. and a width of .88 mm. The nymph is generally more round than the adult, and does not have the dorsal plates as well differentiated. However, the posterior borders of the propodosomal plate are distinct. The anterior border of this plate has three pairs of setae, the two central pairs set on prominent tubercles. The lateral pair are small and are situated slightly posterior to the others. The posterior half of the plate has two setae on each side. The median metapodosomal plate has eight setae arranged in a 2-4-2 sequence. Each of the lateral metapodosomal plate areas has five setae arranged longitudinally in a 2-1-2 sequence. The anterior transverse opisthosomal plate area has six setae arranged in an irregular line. The posterior transverse opisthosomal plate area has nine setae arranged in an irregular line. Three setae are located at the posterior end of the hysterosoma. The dorso-lateral gnathosomal sensillae are long, reaching past the end of the palps. These sensillae are filiform and slightly enlarged distally. The dorso-medial gnathosomal setae are weakly clavate, and do not reach past the end of the palps. The anal plates each have two setae. The genital plates each have three setae. There are two pairs of setae in the medial area just anterior to the genital plates, and two pairs of setae are located lateral to the genital plates. There are three pairs of setae surrounding the anal plates, with a single median seta located posterior to the plates.

Legs.—Leg I is composed of seven segments. Coxa I has four long, slightly clavate setae and one short seta. Trochanter I has two setae on tubercles located on the inner edge, and two clavate setae situated dorso-medially. The basifemur and the telofemur each have a long, tapered spine on the inner edge. Genu I has two long spines on the inner edge, and tibia I has three long spines and one short spine on the inner edge. Tarsus I has five spines on its inner edge. Coxa II has one long and two

short setae, coxa III has three setae, and coxa IV has four clavate setae respectively. Tarsi I and II each have a gland near the distal end, and tarsi III and IV each have a long slender seta on the distal third of the segment.

Discussion.—With respect to both the nymph and the adult, the number and arrangement of the setae on the dorsal plates vary slightly among individuals. It is of interest to note that occasionally one seta may be missing from a paired position on one side, or an extra seta may occur. However, the number and arrangement of the setae on the coxal plates and trochanter I are constant for the species on both nymphs and adults in the specimens examined.

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